

§ 23.235

decreased to at least 50 percent of the speed at touchdown.

(c) The airplane must have adequate directional control during taxiing.

(d) Seaplanes must demonstrate satisfactory directional stability and control for water operations up to the maximum wind velocity specified in paragraph (a) of this section.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23-45, 58 FR 42159, Aug. 6, 1993; Amdt. 23-50, 61 FR 5192, Feb. 9, 1996]

§ 23.235 Operation on unpaved surfaces.

The airplane must be demonstrated to have satisfactory characteristics and the shock-absorbing mechanism must not damage the structure of the airplane when the airplane is taxied on the roughest ground that may reasonably be expected in normal operation and when takeoffs and landings are performed on unpaved runways having the roughest surface that may reasonably be expected in normal operation.

[Doc. No. 27807, 61 FR 5192, Feb. 9, 1996]

§ 23.237 Operation on water.

A wave height, demonstrated to be safe for operation, and any necessary water handling procedures for seaplanes and amphibians must be established.

[Doc. No. 27807, 61 FR 5192, Feb. 9, 1996]

§ 23.239 Spray characteristics.

Spray may not dangerously obscure the vision of the pilots or damage the propellers or other parts of a seaplane or amphibian at any time during taxiing, takeoff, and landing.

MISCELLANEOUS FLIGHT REQUIREMENTS

§ 23.251 Vibration and buffeting.

(a) There must be no vibration or buffeting severe enough to result in structural damage, and each part of the airplane must be free from excessive vibration, under any appropriate speed and power conditions up to V_D/M_D , or V_{DF}/M_{DF} for turbojets. In addition, there must be no buffeting in any normal flight condition, including configuration changes during cruise, severe enough to interfere with the satisfactory control of the airplane or cause

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excessive fatigue to the flight crew. Stall warning buffeting within these limits is allowable.

(b) There must be no perceptible buffeting condition in the cruise configuration in straight flight at any speed up to V_{MO}/M_{MO} , except stall buffeting, which is allowable.

(c) For airplanes with M_D greater than $M 0.6$ or a maximum operating altitude greater than 25,000 feet, the positive maneuvering load factors at which the onset of perceptible buffeting occurs must be determined with the airplane in the cruise configuration for the ranges of airspeed or Mach number, weight, and altitude for which the airplane is to be certificated. The envelopes of load factor, speed, altitude, and weight must provide a sufficient range of speeds and load factors for normal operations. Probable inadvertent excursions beyond the boundaries of the buffet onset envelopes may not result in unsafe conditions.

[Amdt. 23-62, 76 FR 75755, Dec. 2, 2011]

§ 23.253 High speed characteristics.

If a maximum operating speed V_{MO}/M_{MO} is established under § 23.1505(c), the following speed increase and recovery characteristics must be met:

(a) Operating conditions and characteristics likely to cause inadvertent speed increases (including upsets in pitch and roll) must be simulated with the airplane trimmed at any likely speed up to V_{MO}/M_{MO} . These conditions and characteristics include gust upsets, inadvertent control movements, low stick force gradients in relation to control friction, passenger movement, leveling off from climb, and descent from Mach to airspeed limit altitude.

(b) Allowing for pilot reaction time after occurrence of the effective inherent or artificial speed warning specified in § 23.1303, it must be shown that the airplane can be recovered to a normal attitude and its speed reduced to V_{MO}/M_{MO} , without—

(1) Exceptional piloting strength or skill;

(2) Exceeding V_D/M_D , or V_{DF}/M_{DF} for turbojets, the maximum speed shown under § 23.251, or the structural limitations; and